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Setting up a Trimble SPS461 GPS to receive RTK Corrections Internally

by Bob Glover

As more people move toward using RTK for more precise positioning both in the horizontal and vertical, we are often asked for help in setting up NTRIP correction streams in HYPACK®. While it is still possible to send corrections to the GPS unit using the Ntrip.dll configured in HARDWARE, this requires a serial connection to the GPS unit. Far fewer computers still maintain a standard serial port making the setup more confusing. Considering an Internet connection is going to be needed for either setup, it is now more beneficial to simply setup the GPS unit to receive the corrections directly using the network interface for communications.

Be sure to have the wireless LAN port set to share the Internet across to the correct network adaptor. A quick Google search will take you step-by-step through the process of sharing the Internet connection between adaptors.

1. **Login to your Trimble unit, accessing it via the assigned IP address.** The default user name is Admin and the password is Password. From the landing page, follow the steps listed in the screen capture below.

FIGURE 1. Trimble Firmware Landing Page

I/O Configuration?

select to enter I/O configuration

Type	Port	Input	Output
TCP/IP	5017	-	-
TCP/IP	5018	-	-
UDP	255.255.255.5666	-	NMEA-GGA(20Hz), NMEA-ZDA(1Hz)
TCP/IP	5666	-	-
TCP/IP	28001	-	-
TCP/IP	28002	-	-
IBSS/NTRIP Client 1	-	-	-
IBSS/NTRIP Client 2	-	-	-
IBSS/NTRIP Client 3	-	-	-
IBSS/NTRIP Server	-	-	-
NTRIP Caster 1	2101	-	-
NTRIP Caster 2	2102	-	-
NTRIP Caster 3	2103	-	-
Serial	Modem 1 (19.2K-8N1)	-	NMEA-GGA(5Hz)
Serial	Modem 2 (38.4K-8N1)	-	NMEA-GGA(1Hz), NMEA-ZDA(1Hz), NMEA-HDT(1Hz)
Bluetooth	1	-	-
Bluetooth	2	-	-
Bluetooth	3	-	-
USB	-	-	NMEA-GGA(20Hz), NMEA-ZDA(1Hz)

Select to configure the VRS Network

2. **In the I/O configuration page, select the IBSSNTRIP Client 1 to open the configuration parameters (Figure 2).**

3. **Configure the device according to Figure 2.** Once you have entered your information be sure to select the Enable check box.

FIGURE 2. Client 1 Configuration

I/O Configuration?

Receiver Status
Satellites
Receiver Configuration
I/O Configuration
Port Summary
Port Configuration
Bluetooth
Beacon
OmniSTAR
Network Configuration
Security
Firmware
Help

IBSS/NTRIP Client 1

IBSS/NTRIP Client

Status: Init
Enable: ☒

IBSS Mode: ☐

NtripCaster http://209.255.196.164:2101

Username: HYPACK

Password: *****

Verify Password: *****

Mount Point: SingleBase_CMRp

Get Mount Points

OK

Remember to check the box to enable the service

Enter your Ntrip caster ip Username and Password

Select your mount point

Click to close and save

Remember that GREEN = GOOD. Figure 3 shows a successful connection to the NTRIP network. The input is CMR and the output should show GGA at 5 second intervals.

FIGURE 3. Green Indicates Successful Connection to the NTRIP Network

I/O Configuration?

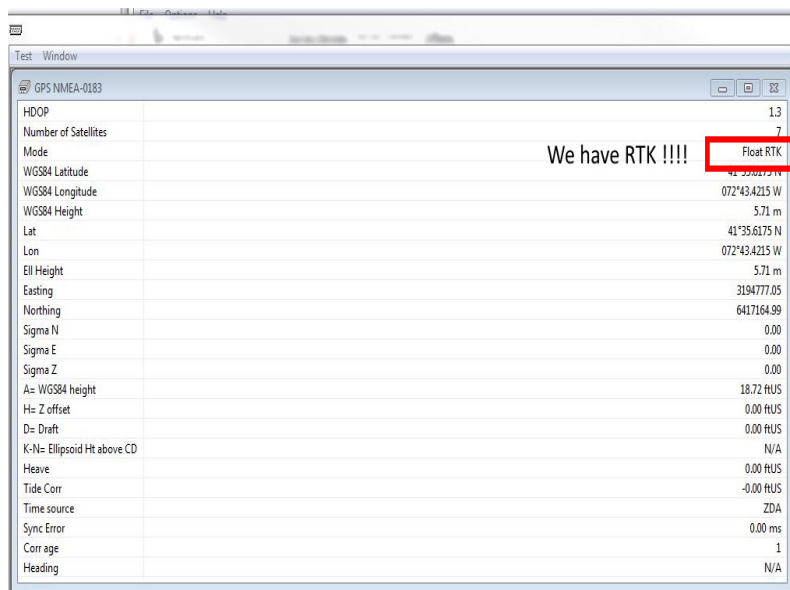
Receiver Status
Satellites
Receiver Configuration
I/O Configuration
Port Summary
Port Configuration
Bluetooth
Beacon
OmniSTAR
Network Configuration
Security
Firmware
Help

Type	Port	Input	Output
TCP/IP	5017	-	-
TCP/IP	5018	-	-
UDP	255.255.255.255:5666	-	NMEA-GGA(20Hz), NMEA-ZDA(1Hz)
TCP/IP	5666	-	-
TCP/IP	28001	-	-
TCP/IP	28002	-	-
IBSS/NTRIP Client 1	209.255.196.164:2101/SingleBase_CMRp	CMR	NMEA-GGA(5 Sec.)
IBSS/NTRIP Client 2	-	-	-
IBSS/NTRIP Client 3	-	-	-
IBSS/NTRIP Server	-	-	-
NTRIP Caster 1	2101	-	-
NTRIP Caster 2	2102	-	-
NTRIP Caster 3	2103	-	-
Serial	Modem 1 (19.2K-8N1)	-	NMEA-GGA(5Hz)
Serial	Modem 2 (38.4K-8N1)	-	NMEA-GGA(1Hz), NMEA-ZDA(1Hz), NMEA-HDT(1Hz)
Bluetooth	1	-	-
Bluetooth	2	-	-
Bluetooth	3	-	-
USB	-	-	NMEA-GGA(20Hz), NMEA-ZDA(1Hz)

Green is good, we are getting CMR corrections

4. **Check the GPS status in HYPACK®.** Opening the test window for the GPS in HYPACK® HARDWARE should show the status of either Float or Fixed RTK, depending on the precision package installed on the GPS firmware.

FIGURE 4. Confirming RTK Positioning in the GPS Window in HYPACK® HARDWARE



We have RTK !!!! Float RTK

GPS NMEA-0183	
HDOP	1.3
Number of Satellites	7
Mode	Float RTK
WGS84 Latitude	41°35.6175' N
WGS84 Longitude	072°43.4215' W
WGS84 Height	5.71 m
Lat	41°35.6175' N
Lon	072°43.4215' W
Ell Height	5.71 m
Easting	3194777.05
Northing	6417164.99
Sigma N	0.00
Sigma E	0.00
Sigma Z	0.00
A= WGS84 height	18.72 HUS
H= Z offset	0.00 HUS
D= Draft	0.00 HUS
K-N= Ellipsoid Ht above CD	N/A
Heave	0.00 HUS
Tide Corr	-0.00 HUS
Time source	ZDA
Sync Error	0.00 ms
Corr age	1
Heading	N/A

This setup certainly makes the configuration of the NTRIP corrections far more streamlined than in past methods and, at the same time, removes the necessity of serial ports and null modems. Should you have any further questions on this setup, please contact help@hypack.com